

Serial No.09/942,328
HP Docket No: 10008019-1

New Claims

1. (Currently Amended) ^{cache} A coherency maintenance system comprising:
a plurality of cache memories including a cache line for storing
information;

a plurality of processor cores included on a single substrate for processing
instructions and information stored in said plurality of cache memories wherein one of said
plurality of processor cores is coupled to and associated with one of said plurality of cache
memories; and

a coherency system bus for communicating information between said
plurality of cache memories and said plurality of processor cores in accordance with a coherency
protocol, wherein said coherency protocol associates a pending state with said cache line wherein
said pending state is one of a plurality of states comprising a pending invalidate write miss state,
pending copy back state, and pending copy forward state.

2. (Original) A cache coherency system of Claim 1 wherein said pending state locks out
access to said cache line when said cache line is in transition and continues to lock out access to
said cache line until appropriate responses are received indicating continuation of a cache line
transaction will not result in race conditions that cause information coherency problems.

3. Please cancel.

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~~4~~ (Currently Amended) A cache coherency system of Claim ¹~~3~~ wherein said pending
invalidate write miss state is a state in which a cache line transaction is waiting for invalidate
acknowledgements from other caching agents on said system bus and when said invalidate
acknowledgements are received, the pending invalidate write miss state transitions over to a
modified state that permits a write operation to proceed.

Serial No.09/942,328
HP Docket No: 10008019-1

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5. (Currently Amended) A cache coherency system of Claim ~~3~~¹ wherein said pending copy back state is a state in which a cache line transaction is waiting for a copy back reply message and said cache line enters said pending copy back state during a write back due to an external write miss. (llh)

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6. (Currently Amended) A cache coherency system of Claim ~~3~~¹ wherein said pending copy forward state is a state in which a cache line transaction is waiting for a copy forward reply message and said cache line enters said pending copy forward state during a cache to cache transfer due to an external read miss. (llh)

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7. (Currently Amended) A cache coherency system of Claim ~~3~~¹ wherein said pending states lock out access to a cache line that is in transition between primary states thereby ensuring coherency and preventing race conditions from developing during the completion of a cache line transaction. (llh)

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8. (Original) A cache coherency system of Claim ~~7~~⁶ wherein said bus cache coherency protocol further includes three primary cache line states comprising: a modified state in which said cache line includes a recent value;

a shared state in which said cache line includes the same value as in another memory; and

an invalid state in which said cache line is not available for access in the particular cache in which it is in the invalid state.

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9. (Original) A cache coherency system of Claim ~~8~~⁷ wherein said cache line is in said modify state in one of said plurality of caches and in said invalid state in the rest of said plurality of caches.

Serial No.09/942,328
HP Docket No: 10008019-1

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10. (Original) A cache coherency system of Claim ⁷8 wherein said cache line is in said modify state in one of said plurality of caches and in said invalid state in the rest of said plurality of caches.

¹⁰
11. (Original) A coherency maintenance system comprising:
a plurality of cache memories including a cache line for storing information;
a plurality of processor cores included on a single substrate for processing instructions and information stored in said plurality of cache memories wherein one of said plurality of processor cores is coupled to and associated with one of said plurality of cache memories; and

a coherency system bus for providing coherency in accordance with a memory coherency maintenance method, wherein said memory coherency maintenance method maintains coherency throughout a shared memory model including said plurality of cache memories wherein said coherency maintenance method associates a pending state with said cache line wherein said pending state is one of a plurality of states comprising a pending invalidate write miss state, pending copy back state, and pending copy forward state.

¹¹
12. (Original) A cache coherency system of Claim ¹⁰11 wherein said memory coherency maintenance method comprises:
attempting to access information in a first memory;
entering a pending state;
changing to a modify state;
transitioning to an invalid state; and
shifting to a shared state.

¹²
13. (Original) A cache coherency system of Claim ¹⁰12 wherein said memory coherency maintenance method comprises a pending state that locks out access to

Serial No.09/942,328
HP Docket No: 10008019-1

information included in one of said plurality of caches while transitioning between other states.

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~~14~~. (Original) A cache coherency system of Claim ¹⁰~~11~~ wherein one of said plurality of processors attempts to access information from an external cache.

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~~15~~. (Original) A cache coherency system of Claim ¹⁰~~11~~ wherein a modified state is entered in one of said plurality of cache memories and the information is put into an invalid state in the remaining of said plurality of cache memories.

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~~16~~. (Original) A cache coherency system of Claim ¹⁰~~11~~ further comprising an embedded memory for storing information and data for downloading to said plurality of cache memories and utilization by said plurality of processors.

¹⁶
~~17~~. (Original) A cache coherency system of Claim ¹⁵~~16~~ wherein said cache line is in a shared state and comprises the same value as in said embedded main memory.

18-21. Please cancel claims 18-21.